



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,255	09/24/2003	Thomas J. Hunt	21256	3290
27183	7590	02/02/2009	EXAMINER	
PRAXAIR, INC. LAW DEPARTMENT - M1 557 39 OLD RIDGEBURY ROAD DANBURY, CT 06810-5113			STONER, KILEY SHAWN	
			ART UNIT	PAPER NUMBER
			1793	
			MAIL DATE	DELIVERY MODE
			02/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/668,255

Applicant(s)

HUNT ET AL.

Examiner

KILEY STONER

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogata et al. (JP-402043362A) (hereafter Ogata).

Ogata teaches a disc shaped sputter target/backing plate assembly made by forming spaced apart ridges (3) within the surface of the backing plate (1), forming a sputter target with a substantially flat sputtering surface (2) and bonding surface, applying solder material (4) to the interface spaces and allowing the solder to solidify to form a bond (abstract and figure 1). Ridges are circular, arcuate or polygonal (figures 3-1 to 3-4) with heights and widths of about 0.02 to about 0.06 inches with a distance between ridges (pitch) of up to about 0.4 inches (abstract). Columns 7-8 of Ogata teach known soldering alloys.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata et al. (JPN 02-43362A) in view of Ivanov (US 20050284749 A1).

Ogata teaches a disc shaped sputter target/backing plate assembly made by forming spaced apart ridges (3) within the surface of the backing plate (1), forming a sputter target with a substantially flat sputtering surface (2) and bonding surface, applying solder material (4) to the interface spaces and allowing the solder to solidify to form a bond (abstract and figure 1). Ridges are circular, arcuate or polygonal (figures 3-1 to 3-4) with heights and widths of about 0.02 to about 0.06 inches with a distance between ridges (pitch) of up to about 0.4 inches (abstract). Column 8 paragraph 2 of the patent teaches use of a Ag/Cu material. However the target and backing materials are not disclosed. Neither is the solder clearly disclosed.

Ivanov teaches bonding of a target comprising Ta, Al, Ag, Cu, Ti, Ta, Co or Ni and a backing plate comprising Al, Ti, Cu and their alloys (paragraph 39), which, are conventional materials. The solder comprises Sn-Ag-Cu (paragraph 33).

At the time of the invention it would have been obvious to one of ordinary skill in the art to use conventional target and backing plate materials with a conventional solder such as Sn-Ag-Cu to form a reliable connection when bonding sputtering assemblies, particularly assemblies comprising Ag and Cu.

Response to Arguments

Applicant's arguments filed 4/28/08 have been fully considered but they are not persuasive.

The applicant argues that:

"Ogata does not disclose each and every feature of the claimed invention. For example, Ogata et al. does not disclose forming a backing plate with a bonding surface having a plurality of spaced-apart ridges that are disposed on and within the periphery of the bonding surface of the backing plate as set forth in independent claims 1 and 18."

The examiner respectfully disagrees. It is the examiner's position that Figures 1-3 of Ogata show these features.

The applicant further argues that:

"[T]he ridges in the present invention act as spacers to ensure a substantially uniform solder thickness. By comparison, Ogata et al. simply provides grooves or slots in the bonding surface of the backing plate where the brazing material is introduced presumably in order to reduce warpage and deformation of the target assembly. See translated Abstract."

The applicant's argument is not commensurate in scope with the claims. The claims do not positively require the ridges to act as spacers/standoffs. Nor does the claimed process require the sputter target to sit on top of the ridges of the backing plate. The applicant should note that Figure 2 of the instant application is virtually identical to figures 1-2 of Ogata. Specifically, the ridges of Ogata are of uniform height and the solder is a uniform thickness as shown in figures 1 and 2. Further as the dimensions of the Ogata ridges are the same as the dimensions of the ridges in the instant invention, the same resulting solder thickness would be expected. In addition, paragraph [0021] of the instant application states that "the spacing of the ridges has to be sufficient to

prevent bowing of the sputter target at the center, especially for thinner and large diameter sputter targets”, which is the same reasoning (prevent warpage) that is provided in the abstract of Ogata (emphasis added by the examiner). Thus, it is the examiner’s position that the raised portions of Ogata accommodate the bonding material and provide a uniform thickness interface.

The applicant also argues that Ogata teaches brazing instead of soldering. The applicant’s attention is directed to paragraphs 7 and 8 of Ogata where known soldering alloys are clearly taught.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiley Stoner whose telephone number is 571-272-1183. The examiner can normally be reached Monday-Thursday (9:30 a.m. to 8:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 1793

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kiley Stoner/

Primary Examiner, Art Unit 1793